

REMARKS

This application has been carefully reviewed in light of the Office Action dated December 30, 2003. Claims 1 to 10 are currently pending in the application, with Claims 11 and 12 having been canceled. Claims 1, 2 and 7 are the independent claims herein. Reconsideration and further examination are respectfully requested.

Claims 11 and 12 were subject to a restriction requirement as allegedly being drawn to a different invention. Without conceding the propriety of the restriction requirement, Claims 11 and 12 have nonetheless been canceled.

Claims 1 to 10 were rejected under 35 U.S.C. § 102(a) over U.S. Patent No. 5,795,082 (Shimada). Reconsideration and withdrawal of the rejections are respectfully requested.

The present invention concerns quantization of input image data of one pixel to multi-value data with three or more levels. In the present invention, quantization is performed for one pixel in three or more levels for each type of data. Thus, for devices that print with both low density and high density ink, quantization for the low density data is performed in the three levels, and quantization for the high density data is likewise performed in the three levels. Thus, as seen in Figure 7 of the subject application, five different kinds of recording dots can be printed on one pixel: 1) no dot, 2) dot-on level 1 for low density, 3) dot-on level 2 for low density, 4) dot-on level 1 for high density, and 5) dot-on level 2 for high density. The foregoing process provides for a higher quality image than the conventional (two level quantization) process.

Referring specifically to the claims, independent Claim 1 is a quantization method in which quantization processing is applied to data for first and second recording

means which record input image data in a plurality of gradations which belong to each of different gradations in substantially the same hue, comprising the steps of inputting multi-value level image data, a first quantization step of performing quantization of the image data input for the first recording means to data with a lower level than that of the input image data, the first quantization step performing the quantization by conducting error correction, and a second quantization step of performing quantization of the image data input for the second recording means to data with a lower level than that of the input image data, the second quantization step performing the quantization without conducting error correction, wherein at least one of the first and second quantization steps performs quantization of the input image data of one pixel to multi-value data with 3 or more levels, so that the corresponding one of the first and second recording means may record the image in a plurality of gradations, wherein the first recording means records the image with lower density recording material than that used by the second recording means.

Independent Claims 2 and 7 are apparatus and recording-medium claims, respectively, that substantially correspond to Claim 1.

The applied art is not seen to disclose or to suggest the features of Claims 1, 2 and 7, and in particular, is not seen to disclose or to suggest at least the feature of first and second quantization steps performing quantization of input image data of one pixel to multi-value data with 3 or more levels, so that corresponding ones of first and second recording means may record the image in a plurality of gradations, wherein the first recording means records the image with lower density recording material than that used by the second recording means.

Shimada is merely seen to disclose performing quantization of low density data (S140 of Fig. 12) with two levels (on/off state, (i.e., no dot or dot-on)) and quantization of high density data (S120 of Fig. 12) with two levels (on/off state (i.e., no dot or dot-on)). Thus, Shimada merely corresponds to the above-described conventional process and does not quantize the low density data with 3 or more levels, or quantize the high density data with 3 or more levels. Accordingly, Shimada is not seen to disclose or to suggest at least the feature of first and second quantization steps performing quantization of input image data of one pixel to multi-value data with 3 or more levels, so that corresponding ones of first and second recording means may record the image in a plurality of gradations, wherein the first recording means records the image with lower density recording material than that used by the second recording means. As such, Claims 1 to 10 are believed to be allowable.

No other matters having been raised, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa,
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Respectfully submitted,



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